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The University of Southern Mississippi

Alcohol Consumption and Dietary Behavior among College Greek Students

by

William Stevens

A Thesis
Submitted to the Honors College of
The University of Southern Mississippi
in Partial Fulfillment
of the Requirements for the Degree of
Bachelor of Science
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Abstract

Background: Alcohol consumption among college students has increased dramatically within the last three decades. Drinking has increased in even higher rates among students involved in Greek fraternities and sororities. The implications that this rise in drinking has on dietary behaviors are an important concern. While several studies have focused on investigating reasons for drinking and negative consequences with regards to drinking, literature is limited that focuses on how alcohol consumption affects dietary habits and behavior.

Purpose: The aim of this study is to investigate the effects of alcohol consumption on the dietary behaviors of college Greek students.

Methods: An online survey containing several questionnaires—Daily Drinking Questionnaire (DDQ), Protective Behavioral Strategies Scale (PBSS), Alcohol Use Disorder Identification Test (AUDIT), Eating Attitudes Test (EAT), and Dietary Screener Questionnaire (DSQ)—in order to assess the drinking frequency, eating habits, and the correlations between these different measures and various demographics. A total of 550 participants from a single southeastern U.S. university completed the survey (392 non-Greeks, 158 Greeks). Participants had to have consumed alcohol within the past 30 days in order to be eligible to take the survey.

Results: Greek students reported significantly higher rates of alcohol consumption compared to non-Greeks ($p=20.5$ and $p=11.6$, respectively). Greek students also reported higher overall consumption of all food groups, as well as significantly higher rates of eating less before drinking in order to get drunk faster and using laxatives in order to lose weight ($p=.023$ and $p>.01$, respectively).

Conclusion: Alcohol consumption among Greek students was significantly higher than non-Greeks, which could have possibly lead to the higher rates of laxative use, eating less before drinking in order to get drunk faster, and overall higher amounts of food consumption noticed in the Greek population. This research has implications in college health promotion.

Key Terms: Greek students; college students; alcohol; diet

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List of Abbreviations

AUDIT: Alcohol Use Disorder Identification Test

DDQ: Daily Drinking Questionnaire

DSQ: Dietary Screener Questionnaire

EAT: Eating Attitudes Test

GPA: Grade Point Average

HEI: Healthy Eating Index

NIAAA: National Institute on Alcohol Abuse and Alcoholism

PBSS: Protective Behavioral Strategies Scale

Chapter 1: Introduction

Traditionally, college is the time when young adults begin to experiment with alcohol and drinking. Alcohol abuse and misuse has become a central health threat for college students, due mainly to the myriad of negative consequences associated with excessive alcohol intake (Capone et al., 2007). Though students of all kinds are reported to engage in drinking activities, it is now all too common to automatically associate Greek-affiliated students with alcohol consumption. Since the famous Strauss and Bacon study in 1953, there has been much evidence that reported college students who are in fraternities and sororities consume more alcohol, on average, than their non-Greek classmates (Larimer et al., 2000). Greek students also tend to display a higher tendency to abuse alcohol, as well as other substances (Scott-Sheldon, Carey, & Carey, 2008). Greek fraternities and sororities were originally founded as service organizations (Barry, 2007). However, they have recently been scrutinized and stereotyped as student clubs that both promote and encourage heavy drinking among college-aged members. Kuntsche et al. (2000) investigated four key reasons why young people, especially college-aged, drink: to enhance a positive mood, to attain social rewards, to diminish negative emotions, and to avoid social rejection from peers. Understanding why students, especially Greeks, abuse alcohol is crucial to investigating the potentially negative and harmful consequences that arise from such action.

While alcohol use is common among college students, eating disorders are no different (Bryant et al., 2012). Some studies report the percentage of college women with eating disorders to be 20 percent, while for men it is fairly lower at 5 percent (Bryant et al., 2012). There are two main types of negative eating habits that may stem from

alcohol use. The first is when one does not eat much before drinking in order to enhance and quicken the effects of the alcohol on the body. The second is when one does not eat much before or after drinking in order to compensate for the calories being ingested from the alcohol (Peralta, 2002). These are both dietary behaviors related to alcohol consumption that have a significant negative effect on the individual and may lead to more severe negative consequences. Other negative eating behaviors—binge eating and purging—were reported to be higher in rate among adolescents who had high rates of both alcohol use and alcohol-related negative consequences (Anderson, Martens, & Cimini, 2005).

Current literature that focuses on the dietary habits of Greek college students in comparison with their non-Greek peers is limited. One study concluded that there was no difference in the eating patterns of Greek and non-Greek students (Scott-Sheldon, Carey & Carey, 2008). These researchers defined acceptable dietary habits as eating three meals per day. This study does not fully encompass the meaning of healthy eating because defining healthy eating as eating three meals in a day can be problematic without considering moderation, variety, and balance of the foods consumed.

The current investigation evaluated the reported consumption of alcohol among Greek students at The University of Southern Mississippi, as well as the dietary behaviors that correlate with such action. The primary research objectives include:

1. Describe reported frequency and amount of alcohol consumption in Greek students;
2. Describe reported dietary intake, eating attitudes, and use of compensatory behaviors associated with alcohol consumption in Greek students;

3. Evaluate the relationships between demographic factors, reported drinking behaviors, and reported eating attitudes of Greek students;
4. Evaluate the differences between Greek and non-Greek students' reported drinking behaviors, eating attitudes, and dietary consumption.

Chapter 2: Literature Review

The mental health of college students has recently been an increasing topic of interest. Castillo and Schwartz (2013) reported that university administrators have noticed a significant rise in the number of students seeking psychological services and there has been a noted increase in alcohol abuse among college students. According to Castillo and Schwartz (2013), 91 percent of campus counseling directors reported a trend toward a greater number of students with severe psychological problems. Most of the services which these students seek focus on issues that develop from alcohol use, including resultant effects of abuse on health and social behavior. Excessive alcohol use among college students is a widespread problem growing all over the country (Von Ah, 2004). Roughly 80 percent of college students in the United States have consumed alcohol in the past month, while almost half of these students report engaging in heavy episodic drinking (4/5 or more alcohol beverages consumed in one sitting within a two-hour period for females/males; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2013). Many areas of a student's life can be affected by heavy episodic drinking, thus research has been conducted on a range of alcohol-related negative consequences (e.g. missed classes, physical altercations, and death; Mallett et al., 2012). Approximately 600,000 unintentional injuries, 97,000 sexual assaults, and 2,000 deaths annually have been associated with college student drinking (NIAAA, 2013).

Reasons for Drinking

Several motives entice college students to engage in drinking and a broad assumption is that people drink to achieve some desired outcome. For example, heavy drinking is particularly common among people who experience stress and who drink for

coping motives, as well as those whose friends drink heavily and who drink for social motives themselves (Kuntsche, 2005). Kuntsche et al. (2005) reviewed previous studies that focused on college students and drinking motives with regards to the Motivational Model of Alcohol Use, which is a four-dimensional questionnaire that is one of the most frequently used questionnaires in North America to assess the specific motivations—enhancement, coping, desire to fit in—that lead to drinking. Chauvin (2012) concurred that individuals' actions associated with drinking are always preceded by reasons, or motivations, for carrying out such actions. For example, several studies indicated that varying motivations for drinking result in distinguishable patterns of drinking, and each of those motivations might therefore require unique education and programs to lower students' alcohol consumption (McCabe et al, 2005; Meilman, Leichliter, & Presley, 1999; Wechsler, 1996; Wechsler et al., 2000). Motivations are major factors that determine the drinking behaviors of students, and many different kinds of personal motivations affect people differently.

Motivations that have been deemed “enhancement” motivations include the following: enjoying the feeling, experiencing excitement, getting high, and having a pleasant feeling (Cooper, 1994). According to Cooper (1994), a sample of over 1,000 adolescent students in New York reported utilizing enhancement motivations for engaging in drinking behavior. This use of enhancement-motivated drinking led to higher rates of alcohol consumption when compared with other participants who declined using such motivation for drinking. These students also tend to drink more frequently in social situations. Students often perceive that drinking alcohol will lead to positive rewards and this motivation is similar for those who drink alcohol for social reasons as

well as those who drink for enhancement reasons (Cooper, 1994). Some examples of social drinking motives include: increased enjoyment, increased social skills, and overall improved atmosphere of social function or event. Cooper (1994) reported that those students who drink for social reasons experienced the same behaviors as those who used enhancement motivations to drink.

Drinking as a coping mechanism is yet another motivation for drinking commonly reported by college students. Coping-motivated drinking refers to drinking alcohol with the intention that it will reduce or regulate negative emotions (Cooper, 1994). Some examples of coping motivations include the following: to reduce anxiety, to help with depression, and to bring about positive thoughts (Cooper, 1994). Similar to enhancement and social motives, students motivated by coping tend to drink heavily and frequently; however, the students also tend to be depressed, report increased drinking problems, drink alone, associate alcohol use with the use of downers, and present symptoms predictive of abusive drinking. Students who use alcohol as a coping mechanism are also most likely to experience negative outcomes related to their alcohol use (Cooper, 1994). In one study, Cox et al. (2006) used a variety of testing measures—Khavari Alcohol Test, Quantity-Frequency-Variability Index, Reasons for Drinking Questionnaire, and Rutgers Alcohol Problems Index—in order to assess whether negative reasons or positive reasons were stronger predictors of drinking problems among university students. The researchers hypothesized that drinking motives (particularly negative motives, such as coping) among university students in the United Kingdom would predict alcohol-related problems independently of the amount of alcohol consumed. The results of the study concluded that negative reasons, including coping, for drinking lead to a higher

consumption rate of alcohol, as well as a higher frequency of negative consequences associated with such consumption.

Lastly, conformity is a motive for engaging in alcohol consumption (Cooper, 1994). Students who drink alcohol as a way of conforming to a certain mold or persona do so to be accepted or to avoid rejection. While conformity is a type of social motivation, it is rooted in a more personal desire to be something that is not innate (Cooper, 1994). A few examples of motivations for conformity include: peer pressure, defense against being made fun of, fitting in with a certain group, and not being left out of social events (Cooper, 1994). Compared to the other drinking motives, students who report drinking for conformity reasons drink lighter and more infrequently. Grant, Brown, & Moreno (2013) used the same Drinking Motive Questionnaire developed by Cooper (1994) to assess the motives of alcohol consumption among 101 freshmen university students. The findings supported the hypothesis that students using social drinking motives (i.e. drinking to fit in with the crowd, drinking to be liked/accepted) were associated with higher quantity and frequency of consumption compared with students whose motivation to drink was conformity.

Greek Life

While the overall incidence of drinking among college students has been on the rise over the past several decades, it has been increasing at an even greater rate in the Greek community. Another study, which included an alcohol frequency questionnaire completed by a large sample of college students in the US, concluded that Greek students drink more than their non-Greek peers, as well as experience higher rates of alcohol abuse (Park, Sher, & Krull, 2008). Students who are involved in Greek-letter social

societies, namely fraternities and sororities, have adopted the stereotype of being heavy alcohol drinkers, which has been supported by a vast array of studies (Labrie et al, 2007; McCabe et al, 2005; Straus & Bacon, 1953). Capone et al. (2007) reported that members of Greek organizations consistently demonstrate higher levels of alcohol use and related problems than nonmembers. In a review of two decades of research on fraternity drinking, Capone et al. (2007) identified five factors contributing to the heavy drinking consistently observed in fraternities: (1) a continuity of heavy alcohol use from high school to college; (2) self-selection into heavy drinking environments; (3) the central role that alcohol plays in fraternity socialization; (4) misperceptions of drinking norms; and (5) the enabling environment of the fraternity house. The researchers in this study used a series of questionnaires that measured Greek involvement, social norms, alcohol use, alcohol problems, alcohol offers, and social modeling among the over 400 participants that responded to the initial recruitment questionnaire presented to freshmen students during the orientation of a U.S. university.

The importance of considering socialization and selection as two different effects that lead to drinking among Greek students has been central to understanding how alcohol abuse relates to fraternity and sorority membership. These effects work together where selection effects refer to the influence of individual characteristics in leading an individual toward certain experiences or environments and socialization effects refer to the influence of experiences or environments on an individual. For example, students who are heavy drinkers before starting college may tend to select specific fraternities and sororities with a reputation for ‘partying’ and heavy drinking. In turn, being a member of such fraternities or sororities leads to developing and supporting that type of behavior in

order to keep up a certain reputation or legacy (McCabe et al., 2005). Another study confirmed, through the use of a questionnaire designed to measure the motives for drinking and the effects that those motives produce on the user, that both a student's need to be socially accepted and the powerful peer influence of the fraternity and sorority environment contribute to excessive alcohol use among members (Scott-Sheldon, Carey & Carey, 2008).

Lee, Lewis, and Neighbors (2009) reported that there are often event-specific situations in which college students tend to engage in the most alcohol consumption. Twenty-first birthdays are at the top of the list, as 80 percent of students claimed to have drunk on that specific, personal occasion. The same study found that half of 21st birthday drinkers drank more on this occasion than any other previous occasion, and college students consume more alcohol than they anticipate during 21st birthday celebrations (Lee, Lewis, & Neighbors, 2009). A drinking frequency questionnaire was used to assess the intake of over 300 students attending one university in the US. The study by Lee, Lewis, and Neighbors (2009) supports that those who did drink heavily on their twenty-first birthday, but were not typically heavy drinkers, reported greater amounts of negative consequences associated with such drinking. Students have also been found to engage in more drinking during spring break. One reason why drinking and consequences may be elevated during spring break trips is because students intend to engage in heavy drinking during this holiday. As found with twenty-first birthday drinking, research has shown that typically lighter drinkers who drank during spring break were more likely to report consequences (Lee, Lewis & Neighbors, 2009).

Alcohol Use and Dietary Implications

Alcohol use can lead to many severe health concerns, and its effects on diet have begun to be at the forefront of recent research among college students, including Greeks. Eating disorders are common among college students, with 20 percent of women and 5 percent of men engaging in some type of eating disorder (Bryant et al., 2012). Students, predominantly females, have been reported to engage in any of the following four eating behaviors associated with drinking: skipping meals or self-regulating calorie intake during a meal to account for calories ingested from drinking, altering drinking behavior by drinking less or consuming drinks thought to be lower in calories, exercising before or after drinking to burn off the excess calories from drinking, and purging to eliminate the calories ingested from drinking (Bryant et al., 2012). Anderson, Martens, and Cimini (2005) found that college women who purge tend to consume more alcohol and also experience more negative consequences as a result of alcohol consumption when compared to women who do not purge. The questionnaire in Anderson, Martens, and Cimini's study, though its results did not provide a definitive diagnosis of an eating disorder, did gauge the participants' use of laxatives or vomiting in order to lose weight within the past month. Those who regularly engage in weight-control behaviors are more likely to not only participate in other health-compromising behaviors, but also to experience greater negative consequences of substance and alcohol use (Giles et al., 2009). The reasons for such results come from the discovery that dieting and purging among female students has been associated with greater negative alcohol-related consequences such as hangovers, driving under the influence, and unprotected sex. Such compensatory behavior has also been reported in the Greek community, but current

studies and methods are particularly focused almost exclusively on female sorority members (Grieve et al., 2006; Stice et al., 1994).

Previous research supports the claim that alcohol consumption is directly related to disordered eating behaviors. Alcohol consumption and abuse as well as an increased frequency of alcohol-related consequences have been linked to disordered eating (Barry & Piazza-Gardner, 2012). Disordered eating is an increasingly prevalent issue among young women in the United States, especially those of college-age. Although anorexia and bulimia occur in a relatively small percentage of women (0.5- 3%), a much higher percentage of young women report “subclinical” disordered eating behaviors (i.e., chronic dieting or purging; Barry & Piazza-Gardner, 2012). For example, Mintz and Betz (1988) found that 64 percent of undergraduate female students engage in behaviors classified as bingeing, purging, or chronic dieting activity. Tylka and Subich (2002) reported that as many as 60 percent of college females engage in subclinical disordered eating behaviors, such as chronic dieting or binge eating at some point in their lives, and over 69 percent of those women also engage in more extreme diet behaviors such as the use of diet pills, diuretics, fasting, or purging.

Women have historically been more vulnerable to disordered eating as a result of alcohol consumption (Dams-O'Connor et al., 2006). Harrell, Slane, & Klump (2009) suggest that disordered eating among women is a social indicator of drinking problems. This conclusion was arrived at due to the results of their study involving a large number of women, not necessarily students, who completed a questionnaire focusing on their drinking habits and their diagnoses or possibility of future diagnoses of eating disorders. Women meeting diagnostic criteria for an eating disorder are more likely than those

without eating disorders to experience alcohol-related problems (Dunn, Larimer, & Neighbors, 2002). In addition, women who engage in unhealthy weight-loss behaviors (i.e., purging, using diet pills), but who may not meet diagnostic criteria for an eating disorder, have higher rates of alcohol consumption and experience more negative alcohol-related consequences (i.e., driving under the influence, having unprotected sex) than those who do not engage in such behaviors (Dams-O'Connor et al., 2006). The 255 university women who participated in this study completed the National College Health Assessment, which assessed health-related behaviors, consequences of such behaviors, and various risk factors among college students. The use of this assessment tool has helped researchers identify relationships between alcohol abuse and problematic dieting behavior (Dams-O'Connor et al., 2006).

Anderson et al. (2006) determined through the use of a questionnaire completed exclusively by females, that problematic eating and problematic drinking are directly correlated. These results show that alcohol may be used as an “avoidant coping mechanism,” leading to eating disorders. Kelly-Weeder (2010) reports that female college students are more likely to engage in meal skipping, fasting, using diet pills, laxatives and self-induced vomiting with relation to heavy drinking. While reviewing past literature, Kelly-Weeder (2010) found that 61 percent of college-aged women reported recent binge eating and purging behavior, while 9 percent of college-aged men reported engaging in disordered eating behaviors, with 3 percent reported binge eating, and 3 percent reporting self-induced vomiting. Binge drinking rates among both genders were high overall, as 63 percent of female students and 83 percent of male students reported engaging in such drinking (Kelly-Weeder, 2010).

While purging has been a serious concern among college students for many years, other compensatory behaviors such as eating restrictions associated with alcohol use have also become a major concern throughout the collegiate population. For example, eating restrictions include eating less before or after consuming alcohol in order to compensate for the amount of calories being ingested (Peralta, 2002). Compensatory behaviors can also include the action of a student purposively eating less before and during alcohol consumption in order to increase the effects of the alcohol on the body, or to get drunk more quickly. Peralta (2002) conducted a study with 78 students who completed a short interview that investigated drinking rates as well as attitudes, motivations, expectations, and negative consequences of drinking. Peralta found that students restrict food intake or skip meals altogether in order to consume a desired amount of alcohol without having to be concerned about weight gain or appearance and this type of behavior allowed them to experience intoxication with fewer drinks (Peralta, 2002).

Dunn, Larimer, and Neighbors (2002) pointed out that bulimia, binge eating, and purging are more strongly related to alcohol use disorders than restrictive eating behaviors. The researchers' example included an online study that found that among college students with eating disorders, bulimia was associated with more negative consequences related to alcohol use than was any other behavior like restrictive eating. Researchers suggested that the relationship between alcohol consumption and bulimia is stronger than the relationship between alcohol consumption and binge eating or purging even though not all research has reported a close association between alcohol consumption and diet behavior. Moreno-Gomez et al. (2012) concluded that drinking did not affect dietary habits or behaviors among their Spanish student sample. The sample of

almost 1,000 Spanish students from the University of Balearic Islands completed a questionnaire that focused on the relationship between lifestyle factors, including alcohol consumption and diet quality. Assessment tools included the Diet Diversity Score, the Mediterranean Diet Score, and the Dietary Guidelines Score in order to adequately gauge the diets of the participants. The authors determined that results may be due to the fact that alcohol is ingrained among the Spanish culture and may be independent of other lifestyle factors.

Little research has been performed that is focused on the effects that alcohol consumption has on dieting behavior, especially including compensatory behaviors, among collegiate students involved in Greek-letter societies. While the overall alcohol consumption rates have increased among Greek students, as compared to their non-Greek peers, it is important to understand and investigate the effects that such drinking may have on the eating patterns and behavior of such students. This study will focus on the effects of alcohol consumption on the dietary behaviors, specifically compensatory behaviors, which collegiate Greek members experience. The term “compensatory behaviors” follows the definition given by Peralta (2002) as the action of eating less before, during or after alcohol consumption to increase the intoxication effects of the alcohol on the body and to compensate for the calories ingested while drinking. The differences in behavior between Greek and non-Greek students will be assessed.

Chapter 3: Methodology

Participants and Recruitment

Participants were traditional college students aged 18 to 25 recruited at a university in the southeastern region of the US who participated in return for obtaining extra credit in class. To be included in the study, participants must have reported consumption of at least one alcoholic drink within the past 30 days. Participants were recruited primarily through SONA, an online data management system. However, the number of Greek students was low using this system; therefore targeted recruitment of members of Greek letter societies was conducted by the researcher by sending the online survey link to all Greek members at the university via email.

Measures

Daily Drinking Questionnaire

The Daily Drinking Questionnaire (DDQ) was used to measure the quantity and frequency of a participant's alcohol use (Martens et al., 2007). The DDQ asked participants to report the number of drinks they consumed and time spent drinking for each day during a typical week (Collins, Parks, & Marlatt, 1985). Participants then were classified into one of three categories outlined by Collins and colleagues (1985): light drinkers (3 drinks or less- per week), moderate drinkers (4–11 drinks per week), or heavy drinkers (more than 12 drinks per week).

Protective Behavioral Strategies

The Protective Behavioral Strategies Scale (PBSS) is a 15-item scale designed to assess the degree to which individuals engaged in certain protective strategies that may have decreased the likelihood of experiencing negative alcohol-related consequences

(Martens et al., 2005). Participants were asked to “indicate the degree to which they engage in the following behaviors when using alcohol or partying” on a 6-point Likert-type scale ranging from 1 (never) to 6 (always). The PBSS was scored by summing responses to obtain three subscale scores and a total score. Total scores on the PBSS ranged from 16–90, while subscale scores ranged from 7–42 for limiting/stopping drinking, from 5–30 for manner of drinking, and from 3–18 for serious harm reduction.

Alcohol Use Disorders Identification Test

Hazardous drinking was assessed using the Alcohol Use Disorders Identification Test (Alcohol Use Disorders Identification Test [AUDIT]; Saunders et al., 1993), a 10-item self-report measure that has been shown to predict the likelihood of engaging in risky drinking patterns. Specifically, the AUDIT is characterized as the gold standard for identifying risky drinking patterns among respondents across different cultural and age groups, including college students (Kokotailo et al., 2004). Possible scores ranged from 0-36. Higher scores indicated a greater likelihood of hazardous drinking patterns with a clinical cutoff score of eight for college students indicating likelihood of developing an alcohol use disorder (Devos-Comby & Lang, 2008).

Eating Attitudes Test

The EAT-26 contains 26 questions with answer options on a 6-point Likert scale ranging from Always to Never, and includes three subscales that consist of questions regarding dieting, bulimia and food preoccupation, and oral control. Responses are scored such that answers that are most likely to represent problem behaviors, such as those involving extreme dieting or using compensatory means in which to lose weight, receive a score of 3, 2, or 1, while the other 3 responses receive a 0 score. Total scores

range from 0 to 75, with scores of ≥ 20 indicating a respondent is at risk for disordered eating. Scores can be calculated for each subscale, but generally the total score is used to determine if a respondent has a higher risk of disordered eating behavior.

Dietary Intake

The Dietary Screener Questionnaire (DSQ) was used to look at diet quality in a shorter version than the 24-hour recall. The DSQ is composed of 26 questions about the frequency of consumption in the past month of selected foods and drinks to capture intakes of fruits and vegetables, dairy/calcium, whole grains/fiber, added sugars, red meat, and processed meat (Gustafson, 2013). Responses to dietary intake items were subjected to principal axis factor analysis (varimax rotation) to form reliable factor-based dietary scales. Scree-plot and eigenvalue analysis (i.e., eigenvalue > 1.0) identified six factors in the instrument (pattern matrices and interfactor correlations are available). These factors resulted in six dietary scales with satisfactory internal reliability: (a) Fiber/Fruit and Vegetables (Cronbach's $\alpha = .80$), (b) Snacks ($\alpha = .87$), (c) Saturated Fats ($\alpha = .80$), (d) Citrus ($\alpha = .67$), (e) Sugar Sweetened Beverages ($\alpha = .50$), and (f) Potatoes ($\alpha = .77$). Items for each factor (with pattern loading of at least .35) were averaged to form factor-based scale scores.

Demographics

The categories of information that the survey gathered pertaining to this study included basic demographic information including age, gender, academic status, and race. The survey also included questions such as recent alcohol consumption (both the number and frequency), Greek status (fraternity/sorority affiliation), and dietary habits (typical foods eaten while drinking/not drinking).

Statistical Analysis

The cross-sectional study was conducted during the 2011-2013 academic years using an online survey management system. The data in this study were analyzed using the Statistical Product and Service Solutions (SPSS) version 20. All tests were two-tailed using a significance level of $p < .05$. Descriptive statistics and frequencies were used to describe the sample in terms of demographics, dietary intake and drinking behaviors, eating attitudes, and use of protective behavioral strategies. Next, a correlational analysis was conducted to evaluate the relationships between demographic factors, reported drinking behaviors, and reported eating behaviors. A logistic regression was used to predict the odds of Greek status based on diet quality and drinking behaviors. Lastly, independent samples t-tests were used to evaluate differences in reported drinking and eating behaviors as well as compensatory behaviors depending on Greek status.

Chapter 4: Research Findings

Of the 550 students responding to the survey, 28.7% (n=158) reported being affiliated with a Greek fraternity or sorority, while 71.1% (n=392) reported being non-Greek (Table 1). The majority (70.3%; n=264) of non-Greek participants were between 18-20 years of age and female (61%; n=238). Ethnicity was evenly divided with 46.9% White (n=184) and 46.7% (n=183) Black. The majority of Greek participants were between 18-19 years of age (n=104), female (n=91), and White (n=113; Table 2).

Table 1

<i>Greek Affiliation</i>		
	Frequency	Percentage
Yes	158	28.7
No	392	71.1

Table 2

<i>Characteristics of the Sample</i>				
Demographic	Non-Greek		Greek	
	Frequency	Percentage	Frequency	Percentage
Age				
18	119	30.4	49	31.0
19	88	22.4	55	34.8
20	57	14.5	19	12.0
21	50	12.8	19	12.0
≥ 22	78	19.9	16	10.1
Sex				
Male	146	37.2	64	40.5
Female	238	61.0	91	57.6
Race or Ethnicity				
White	184	46.9	133	84.2
Black	183	46.7	17	10.8
Hispanic	3	0.8	0	0
Asian	6	1.5	3	1.9
American Indian or Alaska Native	3	0.8	2	1.3
Native Hawaiian or other Pacific Islander	2	0.5	2	1.3
Other	11	2.8	0	0

On average, Greek students reportedly consumed more drinks per week than non-Greek students (20.5 vs. 11.59, $p \leq .001$). The eating attitudes between Greeks and non-Greeks did not differ significantly (Table 3).

Table 3

EAT Values

	Greek		Non-Greek	
	Mean	Std. Deviation	Mean	Std. Deviation
EAT Total	12.5	12.2	13.1	14.2
EAT Category Score	Frequency	Percent	Frequency	Percent
0.00	81	51.3	186	47.4
1.00	28	17.7	65	16.6

Note. A category score of 1.00 indicates cause for concern/referral for an eating disorder.

Significant correlations were noted for both Greeks and non-Greeks (Table 4).

Both groups had correlations between gender and each measure (DDQ, AUDIT, and PBSS), as well as correlations between GPA and PBSS.

Table 4

Correlations with Drinking Behaviors

	Greek			Non-Greek		
	DDQ	AUDIT	PBSS	DDQ	AUDIT	PBSS
DDQ	-	.567**	-.328**	-	.563**	-.274**
AUDIT	-	-	-.470**	-	-	-.356**
EAT	-.046	.001	-.039	.039	.083	-.256**
GPA	-.353**	-.158	.232*	-.041	-.087	.142*
Gender	-.494**	-.375**	.382**	-.231**	-.171**	.277**
Race	-.045	-.048	-.133	-.051	-.003	-.121*
Diet	-.082	-.016	-.127	.058	.213**	.117
Quality						

Note. EAT: Eating Attitudes Test; DDQ: Daily Drinking Questionnaire; AUDIT: Alcohol Use Disorder Identification Test; PBSS: Protective Behavioral Strategies Scale; GPA: Grade Point Average

*Significance at $p < .05$, **Significance at $p < .001$.

Significant differences between Greeks and non-Greeks were noted (Table 5) for DDQ ($p<.01$), and AUDIT ($p<.01$), and although Diet Quality ($p=.069$) was not significantly different, constructs within Diet Quality were different. For example, Factor 1 ($p=.025$) and Factor 6 ($p=.046$) were significantly different between the two groups.

Table 5

Independent Samples T-Test for Drinking and Diet

Method	Greek			Non-Greek			
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	<i>p</i>
DDQ	121	20.49	22.87	292	11.59	15.32	<.01
AUDIT	121	9.03	5.91	309	6.77	5.77	<.01
DSQ Factor 1	115	22.57	9.34	300	20.28	9.29	.025
DSQ Factor 6	116	8.21	3.23	305	7.43	3.65	.046

Note. DSQ Factor 1 is associated with consumption of fruits, vegetables, and whole grains. DSQ Factor 6 is associated with consumption of potatoes, with a focus on fried potatoes. DDQ: Daily Drinking Questionnaire; AUDIT: Alcohol Use Disorder Identification Test; DSQ: Dietary Screening Questionnaire

Significant differences between groups were noted (Table 6) for avoiding eating before drinking to get drunk faster ($p=.023$) and using laxatives to lose weight ($p<.01$). Compared to non-Greek students, Greek students reported avoided eating before drinking more often, in order to get drunk faster (5.3 times in the past year vs. 9.5 times, respectively), and to compensate for calories (4.6 times in the past year vs. 7.8 times, respectively).

Table 6

Independent Samples T-Test for Compensatory Behaviors

	Greek			Non-Greek			
	N	Mean	Std. Deviation	N	Mean	Std. Deviation	<i>p</i>
Avoid eating	97	9.52	18.59	238	5.26	13.98	.023
Use laxatives	67	4.43	13.87	198	1.07	4.15	<.01

Chapter 5: Discussion

This study was conducted in order to better understand the relationship between fraternity/sorority (Greek) affiliation and alcohol consumption, compensatory behavior use, and dietary habits among college students. The results indicate that Greek students drink more than non-Greek students. This finding is consistent with those found by Scott-Sheldon, Carey, and Carey (2008) that reported higher alcohol consumption rates among Greek students when compared with non-Greek peers. Pace and McGrath (2002) also noted significantly higher rates among Greek students as compared to students who are involved in volunteer clubs and organizations. Using the DDQ, Hummer et al. (2012) also discovered significantly higher rates of alcohol consumption among Greeks versus their non-Greek peers. These researchers found that Greek males reported drinking 20.9 drinks per week, while non-Greek males reported to drink 11.7 drinks per week. Greek females were found to drink 11.1 drinks per week compared to non-Greek females drinking 7.5 drinks per week. The results of Hummer et al.'s study are very comparable to the results of the current study, with Greeks drinking roughly the same amount of alcohol per week (20.5 vs. 20.9) and that amount being significantly higher than that consumed by non-Greeks.

The present study also found that Greek students reported avoidance of eating before drinking in order to become intoxicated faster and in order to offset the calories from alcohol. Greeks reported dieting, vomiting, and using laxatives to lose weight more than non-Greeks. Bryant, Darkes, and Rahal (2012) found that Greek students, particularly women, have negative opinions about their bodies and are more likely to engage in the risky behaviors described above (e.g. vomiting and using laxatives). Akan

and Grilo (1995) completed a study focusing on female college students that found that Caucasian women suffer from higher frequencies of disordered eating behaviors with relation to self-image, as compared to other ethnicities. This research is relevant due to the large majority of white females that comprise the sample of the current study. Cooley and Toray (2001) reported that female college students with higher levels of body image dissatisfaction were significantly more likely to progress to having eating and dieting disorders.

With regards to the EAT, Greeks reported a lower mean score compared to non-Greeks ($M=12.5$; $M=13$, respectively). However, the difference was not significant and both groups are well below the cutoff point for diagnosis of a serious eating disorder ($M>21$). Of the 94 participants that scored a “1.00” on the EAT category scale, 28 were Greek and 65 were non-Greek. Scoring a “1.00” indicates a cause for concern and/or referral for a potential eating disorder. This shows that increased alcohol consumption may not have a substantial effect on eating disorder contraction.

The demographics of the current study sample are highly comparable to the overall student body demographics of the participating university. The Greek community is mostly white, with only 1/3 of the number of chapters on campus being traditional African-American Greek organizations. While females make up almost 2/3 of the overall student body population (out of 12,000 undergrads, 7,644 are female), the same can be said for the university’s Greek system. The nine sororities each average over 50 new members per year, while the male fraternities on campus average just less than 15 new members per year. Overall, Greek organizations comprise only 1,648 students total at this university, which makes the total number of Greek and non-Greek participants in this

study comparable to the actual number of each group on campus (Office of Greek Life, 2014).

The Healthy Eating Index (HEI) is a dietary measure used to assess conformity to federal intake guidelines. Food groups—fruit, vegetable, whole grains, meat, and milk—as well as sodium, oil, and saturated fat intake are entered into the HEI database by a participant as a 24-hour recall. The consumption levels are compared to the federal Food Guide Pyramid recommendations, and a comprehensive score is decided. A score of “100” is the maximum, while a score of “80” classifies a diet as “good” (Hiza & Gerrior, 2002). The researchers in the current study decided to use the DDQ instead of the HEI due to financial constraints and convenience. The current study used the DDQ to assess intake by organizing data into factor scores based on food groups, instead of analyzing actual numerical data involving specific nutrient intake levels. The HEI uses food group analysis as well, but the DDQ was more convenient to use in this study due to accessibility and cost.

The atmosphere and stereotypes that often surround Greek life may lead to potentially hazardous alcohol-related actions. Barry (2007) concluded that fraternities and sororities support heavy alcohol consumption as a social normative, as well as encourage both potential and new members to engage in risky drinking behavior. Greek students, while having less risk perception with regards to drinking, also emulate an environment and culture in which alcohol consumption is a key part of life (Barry, 2007). Therefore, motivations such as conformity and pressure may be responsible for the increased rates of dieting and risky weight loss and compensatory behaviors among Greek students (Cooper, 1994; Dams-O'Connor et al., 2004).

Scott-Sheldon, Carey, and Carey (2008) found that diet, with regards to amount of food consumed, did not differ between Greek and non-Greek students. Similarly, Ouwens, van Strien, and van der Staak (2003) discovered that alcohol intake, no matter the amount of consumption, did not lead to a significant increase in food intake. The present study, however, noted that Greeks not only ate more food overall than non-Greeks, but significantly more when it came to starchy foods (potatoes) and healthy foods (salad, beans, whole grains, and fruit). The reasons for this may be due to several different factors. High numbers of Greek students tend to live on campus, which allows easy access to cafeterias and campus eateries. Also, Greek students may generally be wealthier, or come from a higher socioeconomic household, compared to non-Greeks. Therefore, eating at restaurants and fast-food establishments more often may be commonplace for these students.

The present study was not completed without limitations. A focus on the differences between Greek males and females would have revealed much more useful and important information with regards to calorie compensatory and dieting behaviors. Specific gender correlations could also be used to extract valuable findings associated with the different measures used in the study. Another limitation of the present study is the relatively small sample group. With only 551 total participants from a single Southeastern U.S. university, the results may be hard to generalize for both Greek and non-Greek students. Having higher overall participant numbers, as well as more comparable Greek and non-Greek group numbers, may have led to more representative results.

Implications for this research are multifold. University Greek life directors and health administrators can use this information to prepare health promotional programs, services, and materials. Knowing that gender is significantly correlated with DDQ, AUDIT, and PBSS in both Greeks and non-Greeks may help when producing events and activities centered raising awareness of the potentially negative effects of alcohol consumption on dietary and behavioral habits. A focus on preventing risky compensatory behavior among sorority members, for example, could be organized from the information found in this study.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL



THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD

118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **C11080201**

PROJECT TITLE: **Personality F12**

PROJECT TYPE: **Change to a Previously Approved Project**

RESEARCHER/S: **Michael B. Madson**

COLLEGE/DIVISION: **College of Education & Psychology**

DEPARTMENT: **Psychology**

FUNDING AGENCY: **N/A**

IRB COMMITTEE ACTION: **Expedited Review Approval**

PERIOD OF PROJECT APPROVAL: **08/21/2012 to 08/20/2013**

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair

APPENDIX B

DATA COLLECTION INSTRUMENTS

Daily Drinking Questionnaire

For the *past month*, please fill in a number for each day of the week indicating the *typical number of STANDARD drinks* you usually consume on that day, and the *typical number of hours* you usually drink on that day.

One Standard Drink Equals:
 1 shot or mixed drink
 5 oz. of wine or one wine cooler
 10-12 oz. of beer

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Monday																										
Tuesday																										
Wednesday																										
Thursday																										
Friday																										
Saturday																										
Sunday																										

Protective Behavioral Strategies

Instructions: Please indicate the degree to which you engage in the following behaviors when using alcohol or "partying."

	Never	Rarely	Occasionally	Sometimes	Usually	Always
1: Use a designated driver	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2: Determine not to exceed a certain number of drinks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3: Alternate alcoholic and non-alcoholic drinks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4: Have a friend let you know when you have had enough to drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5: Avoid drinking games	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6: Leave the bar/party at a predetermined time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7: Make sure that you go home with a friend	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8: Know where your drink has been at all times	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9: Avoid drinking shots of liquor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10: Stop drinking at a predetermined time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11: Drink water while drinking alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12: Put extra ice in your drink	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13: Avoid mixing different types of alcohol	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14: Drink slowly, rather than gulp or chug	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15: Avoid trying to "keep up" or "out-drink" others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16: Avoid getting in the car with someone who has been drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17: Avoid mixing alcohol with prescription drugs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18: Always know what you are drinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Alcohol Use Disorder Identification Test

1. How often do you have a drink containing alcohol?

- (0) Never (Skip to Questions 9-10)
- (1) Monthly or less
- (2) 2 to 4 times a month
- (3) 2 to 3 times a week
- (4) 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking?

- (0) 1 or 2
- (1) 3 or 4
- (2) 5 or 6
- (3) 7, 8, or 9
- (4) 10 or more

3. How often do you have six or more drinks on one occasion?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

5. How often during the last year have you failed to do what was normally expected from you because of drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

6. How often during the last year have you been unable to remember what happened the night before because you had been drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

7. How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

8. How often during the last year have you had a feeling of guilt or remorse after drinking?

- (0) Never
- (1) Less than monthly
- (2) Monthly
- (3) Weekly
- (4) Daily or almost daily

9. Have you or someone else been injured as a result of your drinking?

- (0) No
- (2) Yes, but not in the last year
- (4) Yes, during the last year

10. Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?

- (0) No
- (2) Yes, but not in the last year
- (4) Yes, during the last year


Eating Attitudes Test

✓	Please choose one response by marking a check to the right for each of the following statements:	Always	Usually	Often	Some times	Rarely	Never	Score
1.	Am terrified about being overweight.	—	—	—	—	—	—	
2.	Avoid eating when I am hungry.	—	—	—	—	—	—	
3.	Find myself preoccupied with food.	—	—	—	—	—	—	
4.	Have gone on eating binges where I feel that I may not be able to stop.	—	—	—	—	—	—	
5.	Cut my food into small pieces.	—	—	—	—	—	—	
6.	Aware of the calorie content of foods that I eat.	—	—	—	—	—	—	
7.	Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	—	—	—	—	—	—	
8.	Feel that others would prefer if I ate more.	—	—	—	—	—	—	
9.	Vomit after I have eaten.	—	—	—	—	—	—	
10.	Feel extremely guilty after eating.	—	—	—	—	—	—	
11.	Am preoccupied with a desire to be thinner.	—	—	—	—	—	—	
12.	Think about burning up calories when I exercise.	—	—	—	—	—	—	
13.	Other people think that I am too thin.	—	—	—	—	—	—	
14.	Am preoccupied with the thought of having fat on my body.	—	—	—	—	—	—	
15.	Take longer than others to eat my meals.	—	—	—	—	—	—	
16.	Avoid foods with sugar in them.	—	—	—	—	—	—	
17.	Eat diet foods.	—	—	—	—	—	—	
18.	Feel that food controls my life.	—	—	—	—	—	—	
19.	Display self-control around food.	—	—	—	—	—	—	
20.	Feel that others pressure me to eat.	—	—	—	—	—	—	
21.	Give too much time and thought to food.	—	—	—	—	—	—	
22.	Feel uncomfortable after eating sweets.	—	—	—	—	—	—	
23.	Engage in dieting behavior.	—	—	—	—	—	—	
24.	Like my stomach to be empty.	—	—	—	—	—	—	
25.	Have the impulse to vomit after meals.	—	—	—	—	—	—	
26.	Enjoy trying new rich foods.	—	—	—	—	—	—	
Total Score =								
Behavioral Questions:								
In the past 6 months have you:								Yes
A. Gone on eating binges where you feel that you may not be able to stop? (Eating much more than most people would eat under the same circumstances) If you answered yes, how often during the worst week: _____								No
B. Ever made yourself sick (vomited) to control your weight or shape? If you answered yes, how often during the worst week: _____								
C. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape? If you answered yes, how often during the worst week? _____								
D. Ever been treated for an eating disorder? When: _____								

Dietary Screener Questionnaire

DIETARY SCREENER QUESTIONNAIRE

These questions are about foods you ate or drank during the past month, that is, the past 30 days. When answering, please include meals and snacks at home, at work or school, in restaurants, and anyplace else.

Mark an ☒ to indicate your answer. To change your answer, completely fill the box for the incorrectly marked answer (). Then mark an X in the correct one. Your answers are important.

- 1 How old are you (in years)?

--	--	--

 years

- 2 Are you male or female?

- ☐ Male
☐ Female

- 3 During the past month, how often did you eat hot or cold cereals? Mark one ☒.

- ☐ Never → Go to question 4.
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 4 During the past month, what kind of cereal did you usually eat? — Print cereal.

--

- 5 If there was another kind of cereal that you usually ate during the past month, what kind was it? — Print cereal, if none leave blank.

--

- 6 During the past month, how often did you have any milk (either to drink or on cereal)? Include regular milks, chocolate or other flavored milks, lactose-free milk, buttermilk. Please do not include soy milk or small amounts of milk in coffee or tea. Mark one ☒.

- ☐ Never → Go to question 6.
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2-3 times per day
☐ 4-5 times per day
☐ 6 or more times per day

- 7 During the past month, what kind of milk did you usually drink? Mark one ☒.

- ☐ Whole or regular milk
☐ 2% fat or reduced-fat milk
☐ 1%, ½%, or low-fat milk
☐ Fat-free, skim or nonfat milk
☐ Soy milk
☐ Other kind of milk — Print milk.

--

- 8 During the past month, how often did you drink regular soda or pop that contains sugar? Do not include diet soda. Mark one ☒.

- ☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2-3 times per day
☐ 4-5 times per day
☐ 6 or more times per day

- 9 During the past month, how often did you drink **100% pure fruit juices** such as orange, mango, apple, grape and pineapple juices? Do **not** include fruit-flavored drinks with added sugar or fruit juice you made at home and added sugar to. *Mark one* ☒.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2-3 times per day
☐ 4-5 times per day
☐ 6 or more times per day

- 10 During the past month, how often did you drink coffee or tea that had **sugar** or **honey** added to it? Include coffee and tea you sweetened yourself and presweetened tea and coffee drinks such as Arizona Iced Tea and Frappuccino. Do **not** include artificially sweetened coffee or diet tea.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2-3 times per day
☐ 4-5 times per day
☐ 6 or more times per day

- 11 During the past month, how often did you drink **sweetened** fruit drinks, sports or energy drinks, such as Kool-Aid, lemonade, Hi-C, cranberry drink, Gatorade, Red Bull or Vitamin Water? Include fruit juices you made at home and added sugar to. Do **not** include diet drinks or artificially sweetened drinks.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2-3 times per day
☐ 4-5 times per day
☐ 6 or more times per day

- 12 During the past month, how often did you eat **fruit**? Include fresh, frozen or canned fruit. Do **not** include juices.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 13 During the past month, how often did you eat a green leafy or lettuce **salad**, with or without other vegetables?

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day



- 14 During the past month, how often did you eat any kind of **fried potatoes**, including french fries, home fries, or hash brown potatoes?

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 15 During the past month, how often did you eat any **other kind of potatoes**, such as baked, boiled, mashed potatoes, sweet potatoes, or potato salad?

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 16 During the past month, how often did you eat refried beans, baked beans, beans in soup, pork and beans or any other type of cooked dried beans? Do **not** include green beans.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 17 During the past month, how often did you eat **brown rice** or other cooked whole grains, such as bulgur, cracked wheat, or millet? Do **not** include white rice.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 18 During the past month, not including what you just told me about (green salads, potatoes, cooked dried beans), how often did you eat **other vegetables**?

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 19 During the past month, how often did you have Mexican-type **salsa** made with tomato?

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 20 During the past month, how often did you eat **pizza**? Include frozen pizza, fast food pizza, and homemade pizza.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 21 During the past month, how often did you have **tomato sauces** such as with spaghetti or noodles or mixed into foods such as lasagna? Do not include tomato sauce on pizza.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 22 During the past month, how often did you eat any kind of **cheese**? Include cheese as a snack, cheese on burgers, sandwiches, and cheese in foods such as lasagna, quesadillas, or casseroles. Do **not** include cheese on pizza.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 23 During the past month, how often did you eat **red meat**, such as beef, pork, ham, or sausage? Do **not** include chicken, turkey or seafood. Include red meat you had in sandwiches, lasagna, stew, and other mixtures. Red meats may also include veal, lamb, and any lunch meats made with these meats.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 24 During the past month, how often did you eat any **processed meat**, such as bacon, lunch meats, or hot dogs? Include processed meats you had in sandwiches, soups, pizza, casseroles, and other mixtures. Processed meats are those preserved by smoking, curing, or salting, or by the addition of preservatives. Examples are: ham, bacon, pastrami, salami, sausages, bratwursts, frankfurters, hot dogs, and spam.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 25 During the past month, how often did you eat **whole grain bread** including toast, rolls and in sandwiches? Whole grain breads include whole wheat, rye, oatmeal and pumpernickel. Do **not** include white bread.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 26 During the past month, how often did you eat **chocolate** or any other types of candy? Do **not** include sugar-free candy.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 27 During the past month, how often did you eat **doughnuts**, sweet rolls, Danish, muffins, pan dulce, or pop-tarts? Do **not** include sugar-free items.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 28 During the past month, how often did you eat **cookies, cake, pie or brownies**? Do **not** include sugar-free kinds.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 29 During the past month, how often did you eat **ice cream or other frozen desserts**? Do **not** include sugar-free kinds.

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

- 30 During the past month, how often did you eat **popcorn**?

☐ Never
☐ 1 time last month
☐ 2-3 times last month
☐ 1 time per week
☐ 2 times per week
☐ 3-4 times per week
☐ 5-6 times per week
☐ 1 time per day
☐ 2 or more times per day

